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# Animal Welfare Information Center Newsletter

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## Legislation Update

- **H.R. 4** To amend the Public Health Service Act to revise and extend the program of the National Institutes of Health.

Introduced on January 5, 1993, by Henry Waxman (D-CA) and referred to the Committee on Energy and Commerce. Referred to the Subcommittee on Health and the Environment on February 3, 1993. Amendments forwarded to the Committee on Energy and Commerce on February 24, 1993. Mark-up session held and amendments ordered to be reported on March 2, 1993. This act may be cited as the "National Institutes of Health Revitalization Act of 1993."

Title II, section 204, amends the Public Health Service Act to require the Director of the National Institutes of Health (NIH) to prepare a plan to conduct or support research into methods that do not require the use of animals, to reduce the number of animals used in research, and to produce less pain and distress in animals used. The plan shall establish a means of assessing the validity and reliability of such methods, to encourage the acceptance by the  
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## THE SCIENCE OF ANIMAL WELL-BEING

by

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*[Editor's Note - The following article is from the keynote address presented at the combined meeting of the American Society of Animal Science and the International Society for Applied Ethology, held in Pittsburgh, Pennsylvania, on August 8-11, 1992.]*

**L**adies and Gentlemen, it is a great pleasure and privilege for me to address you this evening.

I want to spend my time trying to convince you that ethology — the study of animal behavior — is science. It uses the scientific method, and it is a branch of science that can really contribute to animal production.

It should be remembered that ethology is a very young science. Ethology came of age in 1973 when Karl von Frisch, Konrad Lorenz, and Niko Tinbergen were awarded the Nobel Prize for Medicine or Physiology. Ethology, therefore, is still in its infancy and many mechanisms remain to be elucidated. Even with further knowledge, the possibility of modelling behavior in terms of input-output equations, such as has

been done in nutrition and environmental physiology, seems remote.

Let me change tack for a minute and pose this question — which I lifted from an advertisement for a recently published book — "What is the most complex material object in the universe?" The answer: "Your brain!"

It has been calculated that the human brain contains  $10^{11}$  neurons, that there are  $10^3$  synapses per neuron, and that there are 2 states per synapse. This means that the total number of possible brain states is  $2 \times 10^{14}$ ! And that is the reason why it is unrealistic to expect nice clean-cut models of behavior; the enormous complexity of the organ underlying behavior, the central nervous system, precludes it.

Of course the brain is not just an amorphous mass of neurons; it is organized, and is a system of specialized subsystems. However, even simplified interactional models of brain function (e.g., Bindra, 1976) show that it is extremely complex.

At this combined meeting of the American Society of Animal  
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# USING TRAINING TO ENHANCE ANIMAL CARE AND WELFARE

by  
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There is a growing trend in the zoological and laboratory animal community to recognize the value of using operant conditioning techniques as an animal care and management tool. Animals have been trained for public exhibition for centuries, but only in recent times has the versatility of training been explored to any appreciable extent. The result has been a variety of benefits for animals, caretakers, veterinarians, and others concerned with the welfare of captive animals. This new interest in training has grown concurrently with the interest and attention surrounding the issue of psychological well-being. I don't believe this is an accident. In fact, a strong case can be made that training, from a physical and psychological perspective, is "good" for animals. However, I am referring to a specific type of training.

## Positive Reinforcement

As consultants, we advocate and teach positive reinforcement training. This type of training relies on the voluntary cooperation of the animal to succeed. Unlike some methods, positive reinforcement training does not require food deprivation. Although animals are reinforced with rewards for the desired response, they are fed their

daily allotment of food and rewards for training utilize that diet or extra treats. Operationally, it means that we exhaust the positive alternatives before any negative reinforcement is used. On the rare occasion when an escape/avoidance technique is necessary, it is used minimally and is balanced by a greater proportion of positive reinforcement. Punishment is only used in a life-threatening situation for a person or animal.

Positive reinforcement training is truly universal. Operant conditioning provides the tools; how the trainer uses them provides endless opportunities. We have used these techniques with marine mammals, great apes and other primates, canids, felids, ungulates, and others. The basic techniques remain the same; however, adjustments are made for different species, differences among individual animals, the environmental and social situations they are in, and the specific operational objectives.

If training has a down side, it is twofold. First, training is a skill that takes time and practice to develop. Poorly planned and implemented training can definitely create more problems than it will solve. Secondly, training is

(cont'd p.8 )



Fig. 1 Through positive reinforcement training, this chimpanzee voluntarily cooperates with veterinary examinations.

## **“Meeting the Information Requirements of the Animal Welfare Act.”**

### **A Workshop**

The Animal Welfare Information Center (AWIC) of the National Agricultural Library (NAL) has developed a 1-1/2-day workshop for individuals who are responsible for providing information to meet the requirements of the Animal Welfare Act.

The act requires that investigators provide Institutional Animal Care and Use Committees (IACUC) with documentation demonstrating that a thorough literature search was conducted regarding alternatives. An alternative is any procedure which results in the reduction in the numbers of animals used, refinement of techniques, or replacement of animals.

The objectives of the workshop are to provide:

1. an overview of the Animal Welfare Act and the information requirements of the act.
2. a review of the alternatives concept.
3. a comprehensive introduction to NAL, AWIC, and other organizations.
4. instruction on the use of existing information databases/networks.
5. on-line database searching experience.

This workshop is targeted for principal investigators, members of IACUC's, information providers, administrators of animal use programs and veterinarians. All participants will receive a resource manual.

The workshop will be held on August 26-27, 1993, and again on December 2-3, 1993. Each workshop will be limited to 12 persons. Additional workshops are being planned for 1994.

For more information, contact AWIC at (301) 504-6212, Fax (301) 504-5472 or write to:

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## *Well-being cont'd from p.1*

Science and the International Society for Applied Ethology, there will be many papers dealing with animal behavior. I would like to whet your appetite by describing very briefly three examples of excellent applied behavioral research. They are particularly interesting because of the implications of the results for other branches of animal science.

My first example concerns the research of Ian Taylor who did his graduate work at the University of Illinois. Ian (Taylor et al., 1988) did a very thorough survey of feeders for sows and found that they were very inefficient. This resulted in large amounts of food being spilled and also in injuries to the animals using the feeders. Ian then filmed at high speed the heads of sows as they were feeding in an unencumbered situation. He then very carefully analyzed the film frame by frame and digitized the positions of certain key anatomical features. This allowed him to calculate the envelope of space that the sow requires as she feeds.

Ian went on to design a sow feeder (and other swine feeders, using similar methods) based on the information gained from the behavioral observations. These feeders waste 0.5 percent of food compared to the traditional range of wastage of 2-17 percent. Consider the improvement to productivity of this sort of saving achieved simply through careful observation of how animals behave. These improved feeders also do not injure the animals.

My second example is the work of Temple Grandin (Grandin, 1983) who designs handling facilities for animals. Her cattle-handling facilities are based on a fundamental knowledge of animal behavior. The visual field of the species involved, the flight distance of animals, what they perceive as frightening, the angle at which they move away from a frightening stimulus — these and many more factors go into designing this sort of facility. The benefits are enormous: the whole unit works more smoothly and efficiently, the quality of meat is higher, and the downgrading is less. All this through the application of fundamental principles of animal behavior.

My third example is taken from the work of Anne Marie de Passille. Anne Marie has been doing some intensive research on sucking behavior in calves, and I wish to describe just one small part of her work (de

Passille et al., 1991). The calves are kept in individual pens and fed a set amount of milk from buckets. Immediately after feeding, one group is allowed to suck on solid rubber teats for a few minutes. This results in an increase in the levels of several of the digestive hormones such as insulin, gastrin, and cholecystokinin. We often see examples of hormones' driving behavior — but here it is the performance of the behavior that is affecting the hormones. The implications are that we may get a more efficient digestive process by allowing calves to suck — even if it is non-nutritive sucking. And this is quite apart from any welfare implications.

I hope that these three examples have shown you that there are a variety of ways in which studies of behavior

can have beneficial application in animal production. In connection with Anne Marie's research, I mentioned "animal welfare," and I now wish to talk about that in more detail.

### Problem 1 - What is animal welfare?

Some time ago, Marian Dawkins and I suggested that it was impossible to give "animal welfare" a precise scientific definition. We thought that a loose working definition would be one that encompassed the ideas of the animal in mental and physical health, the animal in harmony with its environment, the animal being able to adapt to its environment without suffering and that we should also take the animal's feelings into account (Duncan and Dawkins, 1983). A loose working definition of "suffering" is a wide range of unpleasant emotional states.

More recently, the idea has emerged that welfare is mainly (Dawkins, 1990) or solely (Duncan and Petherick, 1989, 1991) dependent on what the animal feels.

Scientific evidence on the welfare of farm livestock is urgently required so that rational decisions can be made on intensive production systems and practices. Many different classes of evidence have been investigated with a view to identifying reliable indicators of reduced welfare. Productivity indicators have proved unreliable, and biochemical and physiological indicators have not lived up to their early promise. There has, therefore, been increasing interest in the use of behavior to assess welfare. The idea of being able to assess the welfare of animals by looking at their behavior is an appealing one: the technique is non-invasive, it could be available in the field without specialized equipment, it might give an instantaneous indication of welfare, and behavioral changes might precede some of the other indicators of reduced welfare.

### Problem 2 - Welfare involves science, ethics, and aesthetics.

We need to acknowledge that welfare problems can be only partially solved by scientific answers. Once the facts are known, society also needs guidance in making ethical decisions. There is probably no difficulty if it is shown, say, that a husbandry system leads to a great deal of distress. However, there will be many cases in which there are both welfare costs and benefits to the animal, and these will be problematical. It is also likely that aesthetic judgments enter into the decisionmaking process. Thus, I think that it offends some people aesthetically to see cattle kept in feedlots without access to grazing and chickens kept in cages, no matter what science has to say about animal welfare under these conditions.

### Problem 3 - How can welfare be assessed?

I would now like to lead you through three examples of ways in which behavior has been used to assess the welfare of poultry.

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Case 1 There has been a general criticism voiced that “Hens in battery cages will be frustrated.” How can this be investigated scientifically?

Many years ago, I set out to investigate this question. The approach I took was to subject chickens experimentally to many different frustrating situations and to make a list of all the behavioral responses that they showed (Duncan, 1970). I frustrated the birds’ tendencies to feed, to nest, to behave sexually, to incubate eggs, and to brood chicks in many different ways. The behavioral responses that the birds made were very limited. Hens which were mildly frustrated experimentally showed an increase in displacement preening (Duncan and Wood-Gush, 1972a). If the frustration was severe, they showed stereotyped back-and-forward pacing (Duncan and Wood-Gush, 1972b). If two or more birds were frustrated simultaneously, the dominant birds showed an increase in aggression towards the subordinates (Duncan and Wood-Gush, 1971). There was also evidence that severe frustration was very aversive to the birds (Duncan and Wood-Gush, 1974). Rather surprisingly, the symptoms of severe frustration, stereotyped back-and-forward pacing, and increased aggression, with one exception, are not commonly seen in battery cages. It can be concluded that, generally speaking, caging *per se* does not lead to severe frustration. Displacement preening is seen in battery cages, which suggests that a state of mild frustration is fairly common under commercial conditions. However, it is also commonly seen under “natural” conditions and seems to be the birds’ way of responding to everyday problems.

The exception mentioned above is that certain strains of hens in battery cages show stereotyped back-and-forward pacing (Wood-Gush, 1972) and increased aggression (Hughes, 1979) during the prelaying phase when they appear to be frustrated because they cannot find a suitable nest site.

From these results, I would argue that the main cause of reduced welfare in battery cages is frustrated nesting behavior. There is now some intensive research going on in the U.K., both at Bristol and Edinburgh, to try to incorporate a nesting site or sites into the battery cage.

Case 2 Feather pecking and cannibalism have been problems in poultry production for many years. The industry’s solution is to de-beak or beak-trim the birds. Is this a problem for the birds?

There is no doubt that an outbreak of feather pecking and cannibalism in a group of chickens greatly reduces their welfare. The injuries inflicted can be horrific and can lead to death. The procedure called “de-beaking” or “beak-trimming,” in which about a third of the upper beak and a small part of the lower beak are removed with a sharp heated blade, is very effective in preventing the worst of the damage. It would, therefore, seem that there are great welfare benefits to be gained from this procedure. However, there is now good morphological, neurophysiological, and behavioral evidence that beak trimming leads to both acute and chronic pain. The mor-

phological evidence is that the tip of the beak is richly innervated and has nociceptors or pain receptors (Breward, 1984). This means that cutting and heating the beak will lead to acute pain. In addition, it has been shown that as the nerve fibers in the amputated stump of the beak start to regenerate into the damaged tissue, neuromas form (Breward and Gentle, 1985). Neuromas are tiny tangled nerve masses that have been implicated in phantom limb pain (a type of chronic pain) in human beings. The neurophysiological evidence is that there are abnormal afferent nerve discharges in fibers running from the amputated stump for many weeks after beak trimming — long after the healing process has occurred (Breward and Gentle, 1985). This is similar to what happens in human amputees who suffer from phantom limb pain. The behavioral evidence is that the behavior of beak-trimmed birds is radically altered for many weeks compared to that which occurs immediately before the operation and compared to that shown by sham-operated control birds. In particular, classes of behavior involving the beak, namely feeding, drinking, preening and pecking at the environment, occur much less frequently, and two behavior patterns, standing idle and dozing, occur much more frequently. The only reasonable explanation of these changes is that the birds are suffering from chronic pain (Duncan et al., 1989).

These facts taken together provide strong evidence that beak trimming is not such a trivial operation as has previously been thought. It almost certainly causes both acute and chronic pain. There is, therefore, a welfare cost as well as a benefit in carrying out this procedure. The same may hold true for other surgical interventions that are commonly practiced in animal agriculture, such as tail-docking, castration, de-horning, etc. Many of these are carried out for welfare reasons, e.g., sheep are commonly tail-docked to prevent blow fly “strike,” a condition that reduces welfare enormously and causes high mortality. However, it is seldom acknowledged that there may be a welfare cost to the animal. There may be all sorts of welfare costs apart from acute and chronic pain. To continue with the tail-docking example, the animals may be frightened by the procedure, there may be a social cost (perhaps because they cannot signal to each other so effectively), or they may be frustrated (because they cannot flick flies away).

I am suggesting that some sort of cost-benefit analysis should be carried out on these procedures. This will not be easy. Cost-benefit analysis is anything but an exact science. Ernst Schumacher in his seminal book *Small Is Beautiful*, was very disparaging about cost-benefit analysis. He said, “Cost/benefit analysis is a procedure by which the higher is reduced to the level of the lower and the priceless is given a price. It can, therefore, never serve to clarify the situation and lead to an enlightened decision. All it can do is lead to self-deception or the deception of others; for to undertake to measure the immeasurable is absurd and constitutes but an elaborate method of moving from preconceived notions to foregone conclusions; all one has to do to obtain the desired results is to impute suitable values to the immeasurable costs and



benefits" (Schumacher, 1973). I am not as negative as Schumacher but I do realize that there are difficulties in making such an analysis. However, if we do not admit that these routine surgical procedures have costs and at least attempt the exercise, then we will continue to deceive ourselves. Perhaps the exercise of acknowledging that there are costs will be sufficient incentive to look for alternative solutions.

**Case 3** Do hens in battery cages "miss" items like a dust bath, a foraging substrate, a sexual partner, etc?

In asking these questions, we are really trying to "get inside the head" of the animals. We are trying to find out "how they feel" about what we are doing to them. Of course, subjective feelings are not directly accessible to scientific investigation. In the case of human beings, it is possible to find out indirectly how they feel by asking them, but how can we find out how an animal feels? Fortunately, in the welfare debate, it is not necessary to know exactly how an animal feels; even an indirect measure of feelings, such as how positive or negative these feelings are, would be extremely helpful. Perhaps animals could tell us how they feel by what they choose; they might "vote with their feet." This rationale forms the basis of preference testing, which has been used extensively in poultry science (Duncan, 1992). In a preference test, the animal is given a choice between certain aspects of its environment and it is assumed that it will choose according to how it feels, i.e., in the best interests of its welfare.

However, there are certain pitfalls that have to be guarded against when using preference tests (discussed in more detail by Duncan, 1992). When designing preference tests for animals, we must also ensure that the choices made are not trivial. Likewise, we must ensure that in a preference study the animal is not choosing the lesser of two evils. If we know what the pitfalls are, then we can take suitable precautions to avoid them.

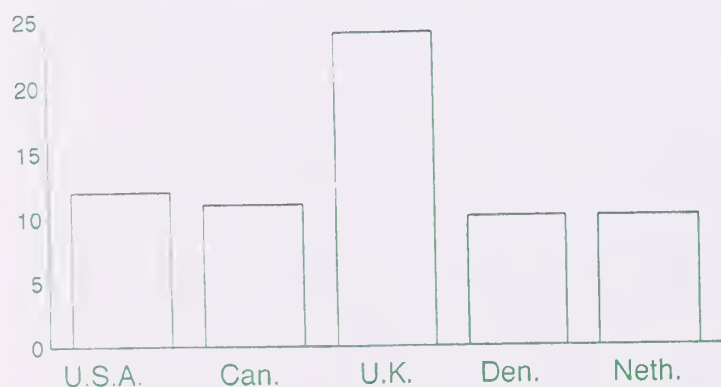
One of the ways in which the strength of preference can be measured is by finding out how hard the animal will work to gain access to its preferred choice. We have borrowed a variety of obstructive techniques from the

psychology laboratory to find out how important to the animal its choices are (Duncan and Kite, 1987). In these tests, the animal is taught to walk in a runway towards the putative reward, which might be food, a dust-bath, a companion, etc. Various obstructions, such as a weighted push-door, are then placed in the runway between the animal and the "reward," and we can see how hard the animal will "work" to reach the goal (Petherick et al., 1990).

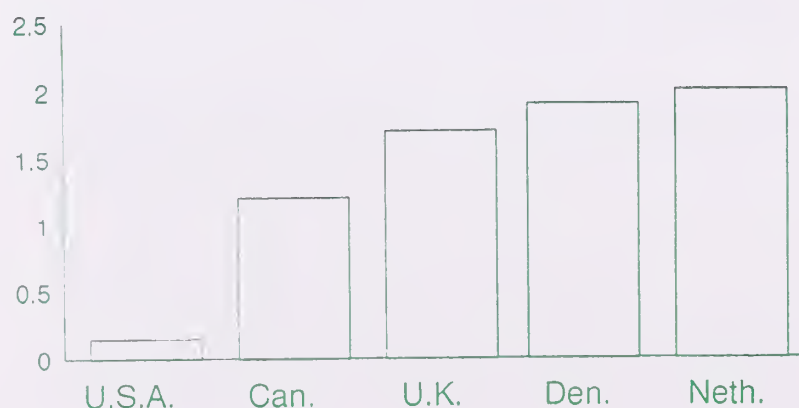
I hope I have convinced you that animal welfare can be better understood (and therefore improved) by a rational scientific approach. An understanding of behavior is going to play a crucial role. I can assure you that the animal welfare issue (a) will not disappear, and (b) cannot be solved by public relations work alone. There is a danger that if this nettle is not grasped, animal agriculture will be seen as *ethically challenged or morally handicapped*.

The question can then be asked "Do we have the necessary expertise working on this topic?" I have tried to assemble some figures, compiled from organizational directories, for a few Western countries. Figure 1 shows the number of applied ethologists working full time with agricultural species in the United States, Canada, the United Kingdom, Denmark, and the Netherlands at the end of 1991. I have tried to be as evenhanded as possible, but these numbers should only be considered approximate. They show that each of these countries has about 10-11 applied ethologists working with agricultural species, apart from the U.K. which has about twice that number. However, when these numbers are expressed according to the value of the livestock industry, a rather different picture emerges. In Figure 2, I have shown the same numbers expressed according to \$1 billion (U.S.) farm cash receipts for animals and animal products generated during 1991. Once again these numbers should only be considered approximate. It now appears that the United States has a much lower research effort going into this area, only a tenth of the effort being expended by some European countries.

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**Fig. 1** Number of applied ethologists working with agricultural species in 1991



**Fig. 2** Number of applied ethologists per value of livestock industry (per \$1 billion farm cash receipts generated in 1991)



I would like to finish up with a quotation from one of my favorite poets, the Irishman W.B. Yeats. In his poem, *An Irish Airman Foresees His Death*, Yeats says:

I balanced all, brought all to mind,  
The years to come seemed waste of breath,  
A waste of breath the years behind  
In balance with this life, this death.

To me, this summarizes the quintessential human characteristic. Human beings can contemplate past events. They can look into the future and foresee their own death. They can make a balance. I believe that this is the "morally relevant difference" between human beings and animals which the animal rights movements fail to acknowledge. There is evidence that animals can feel pain, and I think we have a moral responsibility to eliminate or reduce pain in our animals. There is evidence that animals can feel frightened and frustrated, and I think we have an obligation to reduce these states of suffering as much as possible. However, there is no evidence that animals have any concept of their own mortality. Let me tell you that if I thought they did, I would become a vegetarian tomorrow. I believe that this is *the* unique human quality.

However, it brings with it a grave responsibility. It means that we have to make decisions, we have to make the balance, we have to carry out the audit, for the animals in our charge. I am optimistic. I think that we can do it. But we will only do it reasonably and rationally and defensibly, if first we carefully gather the scientific evidence.

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### *Training cont'd from p.2*

time and labor intensive, particularly in the initial stages of a project. However, if viewed in the longterm, these drawbacks can be turned into advantages. Having caretakers with training skills may help alleviate future problem behaviors. And, training results, such as animals voluntarily cooperating in veterinary procedures, ultimately are time and labor saving.

For example, in a pilot program being conducted at the chimpanzee breeding facility at the M.D. Anderson Cancer Center Science Park in Bastrop, Texas, urine collection training is being pursued with all breeding-age female chimps (9). Currently, urine from these females is collected once per cycle by separating the female from her group and waiting for her to urinate, which may take minutes to hours. Training a chimp to urinate on cue may initially take several hours of time over several weeks. However, investing those few hours to achieve reliable collection in less than 10 minutes realizes tremendous time savings over the life of that animal. With urine collection simple and reliable, other research or medical opportunities also become possible.

Training offers a wide array of benefits for animals and personnel. Through the process of desensitization, animals are conditioned to voluntarily cooperate in veterinary procedures that can be negative events. Training sessions are spent pairing positive reinforcement with these negative events, ultimately making them less negative, less scary, and less stressful. Also, when animals voluntarily cooperate, anesthesia becomes unnecessary, and the frequency of these behaviors can be increased for use on a preventive basis. Another, more subtle benefit is

the increase in choices and control that trained animals' experience. Restraining an animal for a procedure, or having an animal voluntarily cooperate during the procedure without restraint, are two very different events, for both the animal and personnel. One could argue that allowing animals greater control over their lives contributes to psychological well-being.

In practice, skillful use of training techniques has resulted in animals that voluntarily move between areas or cages in a reliable and timely manner; marine mammals that voluntarily allow routine blood, stomach, fecal, urine, and blow hole samples to be taken; and primates that cooperate in physical examinations including offering body parts for inspection (Fig. 1) and treatment of wounds, tolerating a stethoscope and thermometer, and allowing blood sampling and injections (7, 11). Thus, the potential is there to condition individuals of many species to tolerate similar procedures.

### **Aggressive Behaviors**

Training has proven to be effective in addressing aggression problems in social groups in a variety of species. One study documented the reduction of aggressive behavior of one male chimpanzee toward other group members during feeding time (1). By reinforcing the dominant animal for allowing the others to have their share of food and attention, both aggressor and subordinate animals benefitted. He received special treats and attention for his cooperation, and the others were able to receive and consume their allotted food in a less stressful environment. We call this technique "cooperative feeding" and

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**Fig. 2 "Protected contact" training allows trainers to work with elephants in a cooperative manner.**



have used it successfully over the years in many situations, including working pairs of male sea lions together, integrating subdominant dolphins into groups, and preparing and implementing introductions with gorillas and other primates (7, 8). It was also one technique employed with a group of drill baboons to increase overall positive social interactions and affiliative behavior within the group (3, 4).

Positive reinforcement training with elephants, implemented through a system we call "protected contact," has resulted in a dramatic reduction of aggressive behavior toward keepers (5, 10). In this type of training, where trainers work with the elephants through shields or barriers (Fig. 2), aggressive behavior is not punished, but simply ignored. At the same time, cooperative, non-aggressive behavior is reinforced when it occurs. The system does not rely on social dominance or escape/avoidance techniques, but on the voluntary participation of the elephant. In fact, in 365 protected contact training sessions with four elephants, the animals chose to work 99 percent of the time. The result is an elephant that is motivated to cooperate with, rather than act aggressively toward, the trainer.

### **Stereotypic Behaviors and Enrichment**

Training offers techniques and strategies to address neurotic or stereotypic behavior. By training a behavior that is incompatible with the problem one, or a new behavior to replace the undesirable one, or by simply raising the amount of activity and stimulation for the animal, problematic behavior can be reduced or eliminated. In the case of one bottlenose dolphin, training strategies were successfully employed to reduce the incidence of four behavioral problems: swallowing of foreign objects, frequent regurgitation, biting trainers, and inability to integrate into a social group (6).

In a recent study conducted at the M.D. Anderson chimp facility, the issue of training as enrichment was explored. Preliminary results indicate that training offers some benefits for animals that are related to psychological well-being. For example, three significant positive changes occurred during training: reduced self-directed behavior, reduced inactivity, and increased social play (2). To my knowledge this is the first study of its kind, and we intend to do more.

Positive reinforcement training is gaining stature among animal managers as a useful tool for enhancing animal health care and husbandry needs. It is also more versatile and multi-functional than may initially be perceived. Whether the situation involves a solitary animal with limited sensory stimulation, or a group of animals in the most "naturalistic" environment imaginable, well planned and implemented training has a place.

For further information, contact:  
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### **References**

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### **Acknowledgements:**

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### *Legislation cont'd from p.1*

scientific community of methods found to be valid and reliable, and to provide training for scientists in these methods. The Director of NIH shall also establish an Inter-agency Coordinating Committee on the Use of Animals in Research. The Committee shall provide advice to the Director of NIH and be composed of directors of each of the national research institutes and representatives from the Environmental Protection Agency, the Food and Drug Administration, the Consumer Product Safety Commission, the National Science Foundation, and any additional agencies the Director of NIH determines to be appropriate.

Title XIII, section 1301, establishes the Applied Toxicological Research and Testing program whose activities are to expand the health effects of environmental agents, broaden the spectrum of toxicology information that is obtained on selected chemicals, develop and validate alternative methods that can reduce or eliminate the use of animals in acute or chronic safety testing, establish criteria for validation and regulatory acceptance of alternative testing, and provide a process by which scientifically validated methods can be accepted for use.

Title XV, Subtitle A, section 1503, gives the Director of NIH the authority for fiscal years 1994 through 1996 to reserve from the amounts appropriated under section 481A(i) \$7 million for the purpose of offering grants and contracts to public or nonprofit entities to construct, renovate, or otherwise improve regional primate research centers. Related bill S.1

- **H. Con. Res. 5** Expressing the sense of the Congress that any Federal agency that utilizes the Draize rabbit eye irritancy test should develop and validate alternative ophthalmic testing procedures that do not require the use of animal test subjects.

Introduced January 5, 1993, by Andrew Jacobs (D-IN) and referred to the Committee on Energy and Commerce. Referred to the Subcommittee on Health and the Environment on February 24, 1993.

Congress expresses the sense that the Draize rabbit eye irritancy test has long been used by various Federal agencies for predicting human ophthalmic response to pesticides, toxic chemicals, household cleaning solvents, medicinal products, and other hazardous substances. The Draize test causes significant pain to the albino rabbit which is used in each irritancy test, and the reliability of the Draize test has been called into question. The Department of Health and Human Services, Consumer Product Safety Commission, Environmental Protection Agency, and any other department or agency that utilizes the Draize rabbit eye irritancy test, should develop and validate alternative ophthalmic testing procedures that do not require the use of animal test subjects.

- **H.R. 649** To amend the Poultry Products Inspection Act to require the slaughter of poultry in accordance with humane methods.

Introduced January 27, 1993, by Andrew Jacobs (D-IN), and referred to the Committee on Agriculture. Referred to the Subcommittees on Livestock and Department of Operations and Nutrition on January 29, 1993. This act may be cited as the "Humane Methods of Poultry Slaughter Act of 1993." Amends the Poultry Products Inspection Act to include a new subsection entitled "Humane Methods of Slaughter" which states that poultry shall be processed only in accordance with humane methods described in the "Federal Humane Slaughter Act" of August 27, 1958.

- **H.R. 559** To amend the Packers and Stockyards Act, 1921, to make it unlawful for any stockyard owner, market agency, or

dealer to transfer or market nonambulatory livestock, and for other purposes.

Introduced January 25, 1993, by Gary Ackerman (D-NY) and referred to the Committee on Agriculture. Referred to the Subcommittee on Livestock on January 27, 1993. This act may be cited as the "Downed Animal Protection Act."

It shall be unlawful for any stockyard owner, market agency, or dealer to buy, sell, give, receive, transfer, market, or hold nonambulatory livestock unless the livestock has been humanely euthanized. "Humanely euthanized" means to kill an animal by mechanical, chemical, or other means that rapidly and effectively renders the animal insensitive to pain.

- **H.R. 656** To provide more effective protection for marine mammals.

Introduced January 27, 1993, by Michael Bilirakis (R-FL) and referred to the Committee on Merchant Marine and Fisheries. Referred to the Subcommittee on Environment and Natural Resources on February 12, 1993. This act may be cited as the "Marine Mammal Capture, Export, and Public Display Protection Act of 1993."

The Secretary of Agriculture shall review standards established under the Animal Welfare Act for the care and habitat of marine mammals in captivity. Special considerations shall be given to the size of marine mammals to which standards apply, current knowledge of marine physiology and behavior, psychological and physical well-being, social groupings, minimum group size, gender mix, age composition, interspecies compatibility, humane handling, care, treatment, and transportation of marine mammals in captivity.

Other sections of the bill cover tracking systems used to monitor

*cont'd next page >*



marine mammals, setting a moratorium on the taking of marine mammals in U.S. waters, setting limitations on the exportation of marine mammals, and limitations on the use of marine mammals in scientific research.

- **H.R. 236 To establish the Snake River Birds of Prey National Conservation Area in the State of Idaho, and for other purposes.**

Introduced January 5, 1993, by Larry LaRocco (D-ID) and referred jointly to the Committees on Natural Resources, and Merchant Marine and Fisheries. Referred to the Subcommittee on National Parks, Forest and Public Lands on January 26, 1993. Referred to the Subcommittee on Environment and Natural Resources on January 29, 1993. Hearings held on February 23, 1993.

Congress finds that the Bureau of Land Management in the State of Idaho within the Snake River Birds of Prey Area contain one of the densest known nesting populations of eagles, falcons, owls, hawks, and other birds of prey (raptors) in North America. The Snake River Birds of Prey National Conservation Area shall be established with the purposes of conserving, protecting, and enhancing raptor populations and habitats, and the scientific, cultural, and educational resources and values of public lands.

- **H.R. 55 To prohibit the export of American black bear viscera, and for other purposes.**

Introduced January 5, 1993, by Helen Delich Bentley (R-MD) and referred jointly to the Committees on Foreign Affairs, Merchant Marine and Fisheries, and Ways and Means. Referred to the Sub-

committee on Environment and Natural Resources on January 25, 1993. This act may be cited as the "Black Bear Protection Act of 1993."

Export of American black bear viscera from the United States will be prohibited. The Secretary of the Interior shall prepare a report that describes the effectiveness of the Fish and Wildlife Service computerized information systems used to track imports and exports of American black bear and other wildlife body parts.

Note: With the commencement of the 103rd Congress, the status of bills introduced in the 102nd Congress now changes to "died." In order for action to take place on any bill, it must be resubmitted to the new Congress. ■

Cynthia Smith, Info. Specialist

## PROTECTING LABORATORY ANIMALS

*A Statement from the United States Public Health Service*

As a result of a recent lawsuit brought by two animal protectionist organizations, a Federal court ordered the U.S. Department of Agriculture (USDA) to reconsider its exclusion of rats, mice, and birds from coverage under the Animal Welfare Act. In the judge's opinion, "the USDA's decision not to regulate these species sent a message that researchers may subject these animals to cruel and inhumane conditions."

People who are familiar with the extensive system of U.S. laws, regulations, guidelines, and principles that protect the welfare of laboratory animals would not necessarily agree with the judge's comment. The Public Health Service (PHS) wants to reassure the American people that other laws exist to safeguard the welfare of rats, mice, and birds, species that comprise about 90 percent of research animals.

According to the Health Research Extension Act, over 1,000 institutions receiving funds from the PHS to conduct animal experiments are required to comply with the provisions of the act and to follow the recommendations in the Guide for the Humane Care and Use of Laboratory Animals (Guide). The Guide was prepared to assist researchers in maintaining high-quality care for all commonly used laboratory animals. It includes the Government principles for animal care

and use adopted by all agencies and institutions that conduct federally supported animal research. This Guide also applies under another Federal law, the Good Laboratory Practices Act. Research laboratories that conduct studies using rats and mice are regulated by the PHS's Food and Drug Administration and are subject to inspections.

In addition, most institutions that do not receive PHS funding follow the Guide. For example, laboratory animal breeders, pharmaceutical manufacturers, and commercial research laboratories that may not be subject to USDA and PHS regulations may voluntarily participate in a national program of certification by the American Association for Accreditation of Laboratory Animal Care. This private organization monitors institutional animal care programs to ensure that they maintain the standards set forth in the Guide.

Animal use is an integral component of biomedical and behavioral research and testing. The vast majority of scientists recognize that good science and good animal care go hand in hand and would not tolerate or condone cruelty to, or inhumane treatment of, any laboratory animal.



## Announcements...

### ● VISITING FELLOWS PROGRAM

The Kennedy Institute of Ethics at Georgetown University invites applications for a unique research and study program, conducted throughout the academic year. The fall semester program includes a weekly seminar focusing on methods, theory, and applications in bioethics, as well as a mentored research program. The spring semester program is devoted to clinically oriented ethics and mentored research. Fellows may participate in a single semester or an entire year's program. The goal of the program is to offer academic and clinical professionals the opportunity to develop skills in independent research and advanced study in bioethics. It is intended for those with academic or professional advanced degrees or equivalent experience.

Applications for the 1993 Fall Semester must be received by May 1, 1993. Early applications are encouraged and will be considered as they are received.

Address inquiries and requests for applications to:  
Irene A. McDonald, the Visiting Fellows Program  
Kennedy Institute of Ethics, Georgetown University  
Washington, DC 20057  
Telephone: (202) 687-8099  
Fax: (202) 687-6770

### ● WORKSHOP ON EYE IRRITATION TESTING

The Interagency Regulatory Alternatives Group (IRAG) will be conducting a workshop on eye irritation testing entitled "Practical Application of Non-whole Animal Alternatives." The workshop will be held at the Washington Vista Hotel in Washington, DC, on November 12-13, 1993. The goal of this workshop is to help set a course for scientific approval and acceptance of non-animal methodologies useful for eye irritation testing.

The objectives of this workshop are to:

- Assess the strengths and weaknesses of proposed non-whole animal tests for use in assessing eye irritation potential.
- Assess the extent to which a non-whole animal test or a battery of tests might be used in the evaluation of the eye irritation potential of test substances in general or for substances grouped as to chemical class or product line.
- Outline additional research and testing that could be undertaken to develop and implement non-whole animal tests as replacements of the *in vivo* eye irritation test.

For registration information, contact:

Carla Freudenburg (202) 371-2200

For other information about the workshop, contact:

Kailash Gupta (301) 504-0994 or June Bradlaw (301) 344-5883

### ● THE NATIONAL CELL CULTURE CENTER

The National Cell Culture Center is a resource facility that provides large-scale mammalian cell culture services. The Center, available to researchers throughout the United States and Canada, has been established to alleviate the shortage of facilities and expertise required to meet the cell culture needs of the biomedical research community. The Cell Culture Center is supported by a cooperative award from the National Center for Research Resources, NIH.

The Cell Culture Center supports basic biomedical research by providing investigators with the following customized services:

- Large-quantity production of mammalian cells in suspension or monolayer cultures. Quantities range from 10 to 300 liters, which can be provided on a weekly basis.
- Large-quantity production of monoclonal antibodies. Quantities range from 0.5 to 100 grams.
- Large-quantity production of non-hybridoma cell secreted proteins. Quantities vary depending on individual cell lines.

A request form, obtained from the Cell Culture Center, must contain a description of the relevant research project. Following approval of the request by the Cell Culture Center's Scientific Advisory Board, the applicant's cell line is sent to the Center, and grown to the requested amount. Researchers are charged only for the consumable materials and a portion of the labor costs required for each project.

Direct programmatic inquiries regarding this research resource to:

Louise E. Ramm, Ph.D.  
Biological Models and Materials Research Program  
National Center for Research Resources  
Westwood Building, Room 8A07  
Bethesda, MD 20892  
Telephone: (301) 402-0630

Direct requests for applications and resource inquiries to:

Mark Hirschel  
Director, National Cell Culture Center  
8500 Evergreen Boulevard  
Minneapolis, MN 55433  
Telephone: 1-800-325-1112



## ● NATIONAL ANIMAL WELFARE EDUCATION WORKSHOP

The National Institutes of Health (NIH), Office for Protection From Research Risks (OPRR), is cosponsoring an Animal Welfare Education Workshop with Hahnemann University and Drexel University in Philadelphia, Pennsylvania on June 21-22, 1993. The topic will be **ETHICAL ISSUES OF ANIMAL USE IN ACADEME AND INDUSTRY**. The 2-day program will be held at The Warwick Hotel, 1701 Locust Street, Philadelphia, PA. Telephone 1-800-523-4210 or 215-735-6000.

It will focus on investigator training, animal use in teaching, assessment of morbidity and endpoints and, allegations of noncompliance. The format will include panels on each of the topics as well as roundtable discussions with each of the panelists. A training session for new Institutional Animal Care and Use Committee (IACUC) members will run concurrently with the breakout sessions. Ample discussion time will be provided to exchange ideas and interests through question and answer sessions and informal discussions.

The workshop is open to institutional administrators, members of IACUCs, laboratory animal veterinarians, investigators, technicians, as well as any person sharing responsibility for the management of a sound Institutional Animal Care and Use program.

The regular registration fee for the 2-day program: \$135.00

Animal/research technicians: \$95.00

Student (graduate or undergraduate): \$45.00

Registration fee includes workshop materials, two lunches, and refreshment breaks.

For information concerning registration, please contact:

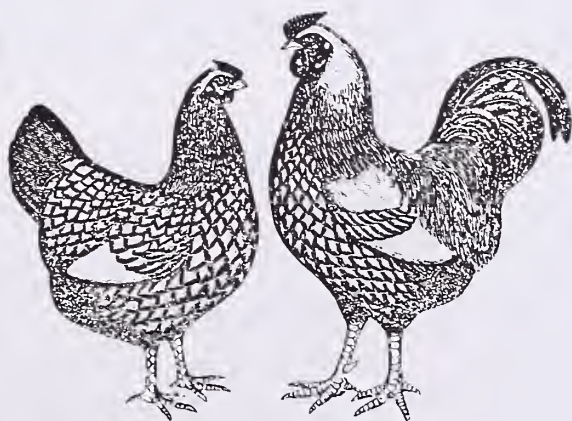
Eleanore Hersh

Director of Continuing Education

Hahnemann University

Telephone: (215) 762-8263, FAX: (215) 762-8848

For further information concerning future NIH/OPRR animal welfare education workshops, please contact Roberta Sonneborn at (301) 496-7163, FAX (301) 402-2803. ■



## The Humane Society of the United States Solicits Nominations

for

### THE 1993 RUSSELL AND BURCH AWARD

The Russell and Burch Award is given annually to scientists who have made outstanding contributions toward the advancement of alternative methods in the areas of biomedical research, testing, or higher education. Alternative methods are considered in the broad sense of the "3Rs", which are replacement (replacing *in vivo* vertebrate methods with other techniques), reduction (modifying procedures so that fewer animals suffice), and refinement (modifying procedures so that animals experience less pain or suffering). The award is named in honor of William M. Russell and Rex L. Burch, British scientists who first articulated the 3Rs approach.

This awards program is a means of recognizing the important role that scientists themselves can play in advancing the welfare of animals in laboratories. The award carries a monetary prize of \$5,000.

Ideal candidates are researchers/educators who: (1) have made an outstanding contribution toward developing or validating alternative methods in biomedical research, testing, or education, (2) were motivated—at least in part—by humaneness, and (3) have a history of laboratory work that is above reproach on humane grounds. Individuals who have questions about their suitability for the award or about the suitability of someone they wish to nominate are encouraged to contact The Humane Society of the United States (HSUS).

Nominations of suitable candidates are due by June 1st. Self-nominations are encouraged. A scientific advisory panel aids The HSUS in selecting the winning candidates. Each year's award is bestowed in the fall.

**Send nominations and inquiries to:** Martin L. Stephens, Ph.D., Vice President/Laboratory Animals, The HSUS, 2100 L Street, NW, Washington, DC 20037. No special forms are necessary. Persons nominating themselves should include supporting documents such as a curriculum vitae and relevant publications. Persons nominating others should arrange to have such documents forwarded.



## Upcoming Meetings...

AAZPA Great Lakes Regional Conference, April 18-20, 1993. Duluth, MN. Contact: (218) 624-1502 - Julene Boe.

Joseph F. Morgan Research Foundation, Current Trends: In Vitro Skin Toxicology and Eye Irritancy Testing, April 21-23, 1993, Ottawa, Ontario, Canada. Contact: (613) 594-8226.

Third Aquarium Congress, April 25-29, 1993. Boston, MA. Contact: John Prescott, Executive Director, New England Aquarium, Central Wharf, Boston, MA 02110. Contact: (617) 973-5221.

AAZPA Northeastern Regional Conference, May 2-4, 1993. Pittsburgh, PA. Contact: (412) 665-3762.

Third Conference on Research Policies and Quality Assurance Government Regulations, May 2-5, 1993. Baltimore, MD. Contact: (410) 706-3327 - Adil Shamoo, Ph.D.

Medical Library Association, May 14-20, 1993. Chicago, IL. Contact: (312) 419-9094.

The American Anti-Vivisection Society Seminar, May 15-16, 1993. Pottstown, PA. Contact: (215) 887-0816 - Zoe Weil.

24th Annual International Association for Aquatic Animal Medicine (IAAAM), May 16-20, 1993. Chicago, IL. Contact: (312) 939-2426 - Jim Robinett.

Rodents & Rabbits: Current Research Issues, May 21, 1993, co-sponsored by The Scientists Center for Animal Welfare (SCAW) and Working for Animals Used in Research, Drugs, and Surgery (WARDS). Hotel Washington, Washington, DC. Contact: (301) 654-6390 or Fax: (301) 907-3993.

Conjoint Annual Meetings of the American Association of Immunologists and the Clinical Immunology Society, May 21-25, 1993. Denver, CO. Contact: (301) 530-7010.

Association of Avian Veterinarians, May 23, 1993. Baltimore, MD. Contact: (303) 756-8380.

1993 Joint Meeting of the American Society for Biochemistry and Molecular Biology and the Division of Biological Chemistry of the American Chemical Society, May 30-June 3, 1993. San Diego, CA. Contact: (301) 530-7009.

Congress on Cell and Tissue Culture, June 5-9, 1993. San Diego, CA. Contact: (410) 992-0946.

Canadian Council on Animal Care Workshop: Approaches to Design and Development of Cost Effective Laboratory Animal Facilities, June 9-11, 1993. Ottawa, Ontario, Canada. Contact: (613) 238-4031.

Creatures of the Dark: The Nocturnal Prosimians, June 9-12, 1993. Duke University Primate Center, Durham, NC. Contact: (919) 684-2535 - Kitty Cornett.

88th Annual Meeting of the American Dairy Science Association, June 13-16, 1993. University of Maryland, College Park, MD. Contact: (217) 356-3182 - Molly Kelley.

NIH-sponsored workshop entitled "Controversial Issues Affecting Animal Use: Challenges for Today's IACUC's," June 17-18, 1993. Oklahoma City, OK. Contact: (405) 271-5185 - Marilyn Perry.

Third International Aquarium Fish & Accessories Exhibition and Conference, June 24-27, 1993. World Trade Centre, Singapore. Contact: (65) 2999273.

VII World Conference on Animal Production, June 28-July 2, 1993. University of Alberta, Edmonton, Alberta, Canada. Contact: (403) 492-3233.

American Society of Animal Science Annual Meeting, July 6-9, 1993, Spokane, Washington. Contact: (217) 356-3182 - Molly Kelley.

American Veterinary Medical Association, Annual Meeting, July 17-21, 1993. Minneapolis, MN. Contact: (708) 925-8070.

National Science Teachers Association, 1993 2nd International Conference, July 23-25, 1993. Oaxtepec, Mexico. Contact: (202) 328-5800.

32nd International Congress of Physiological Sciences, International Union of Physiological Sciences, August 1-6, 1993. Glasgow, Scotland. Contact: (0742) 758688 - Prof. Denis Noble.

Science Innovation '93, The Conference on New Research Techniques, August 6-10, 1993. Boston, MA. Contact: (202) 326-6462.

Association of Avian Veterinarians, 14th Annual Conference, August 31-September 4, 1993. Nashville, TN. Contact: (303) 756-8380.

XXIII International Ethological Conference, September 1-9, 1993. Torremolinas, Spain. Contact: (9) 57-480478.

15th World Congress on Neurology (WCN 93), September 5-10, 1993, Vancouver, BC, Canada. Contact: (604) 681-5226 - Donald W. Paty, MD.

Second International Congress on Peer Review in Biomedical Publication, September 9-11, 1993, Chicago, IL. Contact: (312) 464-2432 - Annette Flanagan.



AAZPA Annual Conference, September 12-16, 1993. Omaha, NE. Contact: (402) 733-8401 - Randy Wisthoff.

American Association of Zookeepers, October 10-15, 1993. Atlanta, GA. Contact: (913) 272-5821.

4th International Lion-tailed Macaque Symposium, October 11-15, 1993. Madras, India. Contact: Registrar, CBSG-India, Box 1683, Peelamedu, Coimbatore, Tamil Nadu, India. Fax: 91-422-572-123.

National Science Teachers Association, 1993 Western Area Convention, October 28-30, 1993. Denver, CO. Contact: (202) 328-5800.

Society for Neuroscience, November 7-12, 1993. Washington Convention Center, Washington, DC. Contact: (212) 532-9400.

National Science Teachers Association, 1993 Midwestern Area Convention, November 11-13, 1993. Louisville, KY. Contact: (202) 328-5800.

World Congress on Alternatives and Animal Use in the Life Sciences, November 14-19, 1993, Baltimore, MD. Contact: (410) 955-3343 - Dr. Alan Goldberg, Baltimore, MD, or 30-532-033 - Prof. Bert van Zutphen, Utrecht, The Netherlands.

National Science Teachers Association, Eastern Area Convention, December 16-18, 1993. Orlando, FL. Contact: (202) 328-5800.

National Science Teachers Association, 1994 NSTA National Convention, March 30-April 2, 1994. Anaheim, CA. Contact: (202) 328-5800.

Congress of the International Primatological Society, July 19-24, 1994. Bali, Indonesia. Contact: (202) 223-6971 - Dr. Soegardjito.

4th International Congress of Vertebrate Morphology, July 31-August 4, 1994. University of Chicago. Contact: (206) 543-3203. ■

## Animal Alternatives Research Grants....

### ● Alternatives in Animal Efficacy and Safety Testing

The Procter & Gamble Company has announced a call for research proposals for alternatives in animal efficacy and safety testing. The purpose of the program is to provide funding for research in biological sciences directed to the development of replacements or improvements to current animal methods used to develop new drugs and other consumer products. Proposals will be accepted from any academic or nonprofit medical research institution. Preference will be given to proposals likely to result in important reductions in usage of or distress to animals in testing areas of mutual interest to the scientist and Procter & Gamble. The program will provide funding of up to a maximum of \$50,000 per year for a period of up to 3 years for each award. Deadline for applications is September 1, 1993. For further information contact:

Animal Alternatives Research Program  
Miami Valley Laboratories  
Procter & Gamble Company  
P.O. Box 398707  
Cincinnati, OH 45239-8707  
Fax (513) 627-1153

### ● Non-animal Methods in Research, Testing, and Education

The American Anti-Vivisection Society has funding available through "The Demeter Fund: Supporting Non-animal Methods in Research, Testing, and Education." The Demeter Fund will give special attention to proposals that: 1) focus on improving methods for producing monoclonal antibodies through in vitro systems; 2) use human rather nonhuman animal tissues; or 3) do not involve the use of intact, nonhuman, vertebrate animals. The Demeter Fund does not provide support for any project involving the use of animals acquired from a private or public shelter. The deadline for submission of proposals is April 30, 1993. For further information contact:

The American Anti-Vivisection Society  
204 Noble Plaza  
801 Old York Road  
Jenkintown, PA 19046-1685  
Fax (215) 887-2088

### ● Companion Animals and Senior Citizens

Sandoz Pharmaceuticals Corporation has awarded a \$100,000 passthrough grant to Jeff's Companion Animal Shelter of Westport, Massachusetts, so that other shelters, humane societies, individuals and nonprofit organizations working for animals and the elderly may initiate similar programs. Jeff's Shelter works to place animals, which otherwise would be euthanized, with senior citizens living in local communities or institutions. The grant monies to be awarded are designed to help increase the number of animals, particularly dogs, that are placed with elderly individuals or couples. For more information about the program, contact:

Jeff's Companion Animal Shelter  
1128 Main Road  
Westport, MA 02790  
or  
Sandoz Pharmaceuticals Corporation  
59 Route 10  
East Hanover, NJ 07936





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